

DEVELOPMENT OF RECOMMENDATION SYSTEMS IN THE UMKM BUSINESS STRATEGY BASED ON LOCATION IN BANDUNG CITY ON PLATFORM ANDROID

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ABSTRACT

Micro small and medium entrepreneurship activities is a, where nearly everyone wants an entrepreneurial themselves. To start entrepreneurship is certainly a business location determination is very important for the progress of the business itself. Over time the increasingly rapid technological advances all activities can be performed using the android Smartphone to support daily activities. Therefore, the building of this system make it easier for *UMKM* recommendation prospective entrepreneurs determine the location of strategic business, target the right to sell and determine a location using the android smartphone. System android in this application can make it easier for would-be entrepreneurs determine the location of businesses utilizing GPS technology to determine where strategic effort to build *UMKM*. On this application in determining business location method using Simple additive weighting (SAW) and have some criteria such as Price Rentals, Aksesibilitas, Hustle location, Target market, security, the number of competitors. Later these criteria for decision making strategic business location. Then it can be inferred the building of an application is expected to ease the SMEC's recommendations wanna-be entrepreneur to determine the location of a strategic effort to build an entrepreneurial.

Kata Kunci : *UMKM*, Recommendations, Simple Additive Weighting

1. INTRODUCTION

1.1. Background

The use of information technology in the form of the internet by the public is very helpful in increasing in terms of economic growth in a region. Many communities are already able to Transact trading a product result of creative industries through the internet so for the perpetrators of these industry efforts require a medium for promotion and

marketing of the results of their creative industries. [1].

Recommendation system location to set up in the wake of efforts to assist employers in making a decision to establish the location of the business. One method used is Simple Additive Weighting (SAW), with the recommendation system determines the location of the business is the criteria will be a priority site selection effort is the price of rent, Aksesibilitas, Crowd, location The target market, security, the number of competitors [2].

Previous research has already been done to develop a decision support system using the method of Simple Additive Weighting (SAW) the selection of the place of business, a decision support system for location selection the new branch, and other locations. Decision support system for the selection of strategic locations for the establishment of places of business of herbal medicine using the methods Simple Additive Weighting (SAW) has been made and examined previously [3]. Decision support system to determine the location of the venture with the method of Simple Additive Weighting (SAW) had previously been done [4]. The study aims to help entrepreneurs in the business site selection decisions. Based on the results of a survey that has been done in establishing the *UMKM* where there is some problem i.e. prospective wirausahwan trouble finding a strategic location in the *UMKM* business puts his Tourist attraction that made the city of bandung, nowadays many people who set up *UMKM* as well as individual berkelempok, but still a large number of the business or prospective entrepreneurs for opening that is not right on target in running its business. Based on the results of the interviews in search of prospective entrepreneurs for inforamsi should be down directly contributes to find location and information for setting up *UMKM*.

1.2. Purposes and Objectives

Based on the issues examined, then the point of writing this final task is:

1. Assist the candidate wirausahwan the difficulties in finding a strategic location to build its SMEs.
2. Assist prospective entrepreneurs recommend SMEC is right on target with target marketing.

- Help simplify wirausahwan candidates in the search for locations and information of SMEs using android smartphone.

1.3. Research Methodology

Research methodology is a process of data collection phase and stage of development of the software. Here is the flow of research conducted can be seen in Figure 1.

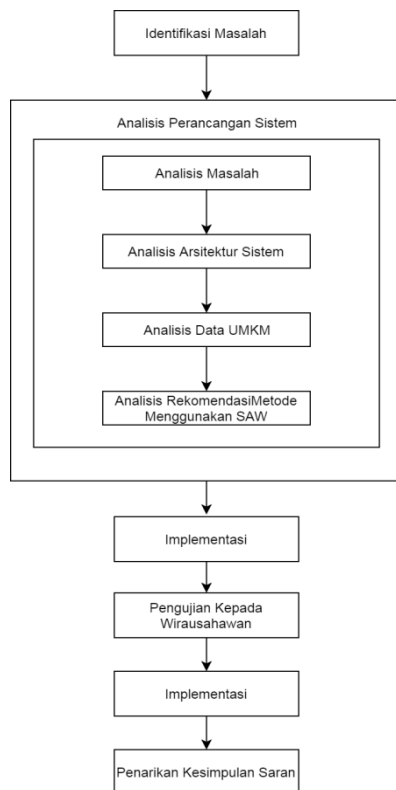


Figure 1 Research Phase

1.4. Software Development Method

The methods used in the manufacture of software using the waterfall model as the stages of software development [5]. Can be seen in Figure 2.

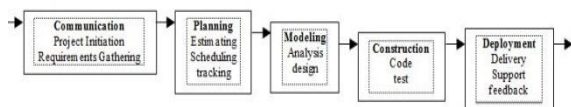


Figure 2 Waterfall Waterfall

2. Research Content

2.1. UMKM

Micro, small and medium enterprises (UMKM) is an industry that has a very vital role in the development and economic development, not only in developing countries but also in developed countries such as Indonesia itself. *UMKM* in Indonesia is highly expected to continue to play a role very rapidly and the optimal collection of labor to cope with the numbers pengangguran. According to BPS, the number of *UMKM* continue to skyrocket and sharp still dominates a number of company-

prusahaan. Already from the beginning of the new order era until now the role of the Government of Indonesia so much preserving the programs to encourage the development of *UMKM* in these areas. But up to now, compared to *UMKM* of countries-developed and developing countries, *UMKM* in Indonesia is still not strong in various sectors or various things, including still more focused on the production of a very high-tech for less, such as culinary, fashion so, furniture, and clothes. In each *UMKM* products exhibition held there are only products which do not vary and that's it-that's it, or a lack of innovation and kreatifif to create or sell products that are worth more than ever [6].

2.2. Simple Additive Weighting (SAW)

Simple Additive Weighting (SAW) very often many people are familiar with is the weighted sum method. The basic concept of this SAW is the search method of the sum of the weighted rating-rating process in each alternative. The method of this very process requires that SAW the normalization of matrix in decision (X) into a rating scale that will be compared with all the rating-rating alternative that is already determined. This method is a method that is most widely used and most in the face of a situation of Multiple Attribute Decision Making (MADM). MADM itself is a method that is often used to search an optimal alternative of a number of alternative-alternative with kriteriyang have been determined. Methods this required making a SAW the decision determining a weighting for each attribute. Score for all alternatives is obtained by summing all of the results of the multiplication between rating (which can be compared with all the alternative) and the weighting of each attribute. Each attribute rating shall be free in the sense already gone through the process of normalizing the decision matrix X. Decision making process is to choose an alternative. ZAG method is often also known the term weighted summation method. For a basic concept of merode this summation is seeking a weighting of rating-rating a performance for any alternative on the whole attribute. [7].

2.3. Google Map API

Google Map API the latest revolution is a map in the web by allowing navigation can arrange useruntuk. By the time the 2005 solution map is still new and need a very special servers. A few moments later, there was a successful download hack Google Maps for use in their own hence google map at pertambah security to maintain a system.

2.4. Recommendation System

Recommendation system is a system designed for a prediction of an item that is in accordance with the wishes of the user, which a diinginkant will be recommended on a user or users. Prediction of a desire of the user information can be retrieved based on user behavior or action patterns often said

something desired by the user. One of the ways that is done to establish a profile of the user's wishes, programs when a user wanted a loan transaction then this loan data will be saved as profiles users or their user. Based on existing user profiles and diperdiksi will note an interest will be liked by the user or the user.

2.5. System Architecture

the system sends the request data as well as how the system sends the response to the requested data until it gets to the user. Can be seen in Figure 3.

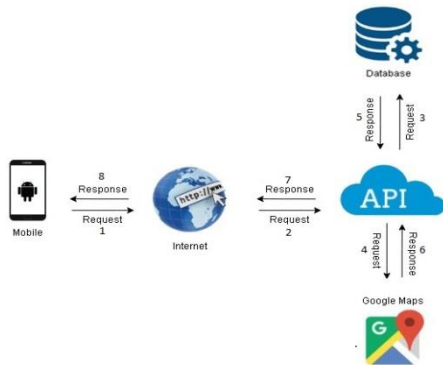


Figure 3 System Architecture

From Figure 3 is knowable data request flow that occurs from a user application to application users get the data requested are as follows:

3. Users Use Smartphone that is connected to the internet
4. Internet access towards the Google Map API to display SMALL MEDIUM ENTERPRISES in Bandung.
5. Data displayed on a Google Map is taken from the database of SMALL MEDIUM ENTERPRISES
6. The system will display the requested results to Android Smartphone.

6.3. Recommendations Analysis

UMKM's recommendations using the method of analysis of the Simple Additive Weighting to determine the location that is referenced by the system. At this stage aims to perform analysis of data obtained at the stage of data collection to determine the details of any each flow criteria, the recommendations of the SAW can be seen in Figure 4.

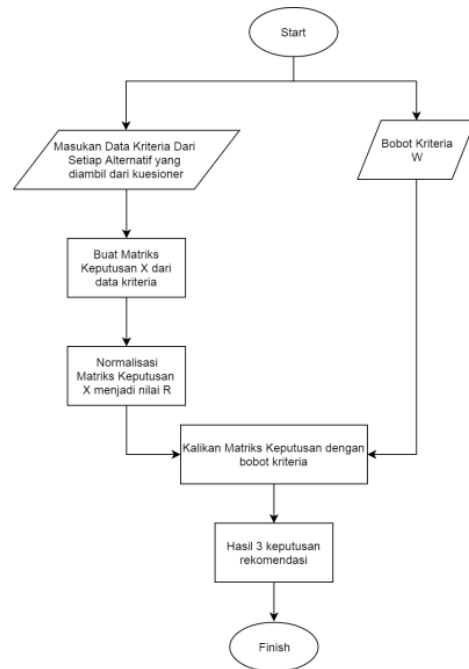


Figure 4. Recommendation Phases

There are 6 criteria used in this study, including the following::

1. Rental rates
2. Accessibilities
3. The crowd Site
4. Target market
5. Security
6. Number of competitors

decision makers and the value is determined by how the interview directly towards entrepreneurs.

- C1= Rental Rates
- C2= Accesibilities
- C3= The crowd Site
- C4= Target Market
- C5= Security
- C6= Number of Competitors

There are 30 alternative decision making i.e.:

A1= Kec. Andir, A2= Kec. Antapani, A3= Kec. Arcamanik, A4= Kec. Astana Anyar, A5= Kec. Ciparay, A6= Kec. Bandung Kidul, A7= Kec. Bandung Kulon, A8= Kec. Bandung Wetan, A9= Kec. Batununggal, A10= Kec. Bojongloa Kaler, A11= Kec. Bojongloa Kidul, A12= Kec. Buahbatu, A13= Kec. Cibeunying Kaler, A14= Kec. Cibeunying Kidul, A15= Kec. Cibiru, A16= Kec. Cicendo, A17= Kec. Cidadap, A18= Kec. Cinambo, A19= Kec. Coblong, A20= Kec. Gedebage, A21= Kec. Kiaracondong, A22= Kec. Lengkong, A23= Kec. Mandalajati, A24= Kec. Panyeulikan, A25= Kec. Rancasari, A26= Kec. Regol, A27= Kec. Sukajadi,

A28= Kec. Sukasari, A29= Kec. Sumur Bandung, A30= Kec. Ujungberung.

The criteria have been determined rents are said to be very inexpensive when price IDR 10 million up to 30 million rupiah. Said to be cheap. When the price of Rp 30 million up to Rp. 50 million. It Said Medium. RP. 50 million up to Rp 60 million. Said To Be Expensive. 60 million rupiah up to Rp. 100 million..

criteria aksesibilitas, Aksesibilitas is terayek is the public transit pass in place a strategic business location. Said to be difficult if there is no public transit pass in the location of the business. It is said Being if only one public transit routes pass in the location of the business. Said to be easy if there are two types of public transit routes pass. It is said very easily if there are three or more types of public transit routes that cross.

Criteria for parties, said to be not many population 20.000 up to 50.000. It is said quite a lot of 50.000 up to 70.000. It is said many 70.000 up to 100.000. Said to be very crowded. 100.000 up to 150.000.

The criteria from the criteria of the Target market. The intended target market is the target market of the business location (school, Mall, Company).

the criteria of security, security record is said to be Low when the crime occurs more than twice a month. It said crime is taking place one to two times a month. Is said to be high if the crime occurred one time in one month. Said to be very high if the crime never happened in one month.

the number of criteria of the competition. The amount of competition. The number of competition around the site are said to be Low if competitors attempt a similar numbered 1 to 5. It said Were 5 to 10. It said High 10 to 20. It is said very high 20 to 30.

After the criteria and the weighting of each criterion value is specified then the following steps to determine a weighted preferences or needs (W) every criteria $W = [W1 W2 W3 \dots Wj]$. (1)

Make a decision Matrix X by the formula:

$$X = \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1j} \\ \vdots & \vdots & \dots & \vdots \\ x_{i1} & x_{i2} & \dots & x_{ij} \end{bmatrix} \quad (2)$$

After determining the decision matrix is X then the normalization by calculating the value of a performance (Rijj) on each criterion Cj. By using the following formula:

$$r_{ij} = \begin{cases} \frac{x_{ij}}{\text{Max}_i(x_{ij})} \\ \frac{x_{ij}}{\text{Min}_i(x_{ij})} \end{cases} \quad (3)$$

After ternormalisai the value rating (Rij) then further determine the matrix R

$$R = \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1j} \\ \vdots & \vdots & \dots & \vdots \\ r_{i1} & r_{i2} & \dots & r_{ij} \end{bmatrix} \quad (4)$$

The result value of prefensi (Vi) calculation of matrix multiplication ternormalisasi (R) with a weighted (W) correspond to the columns of the matrix below.

$$V_i = \sum_{j=1}^n w_j r_{ij} \quad (5)$$

The result of the calculation of the Vi larger yield Ai is the best recommendation for candidate applications will be built.

6.4. Usecase Diagram

Here is a Use case diagram that is designed for application to be built can be seen in Figure 5.

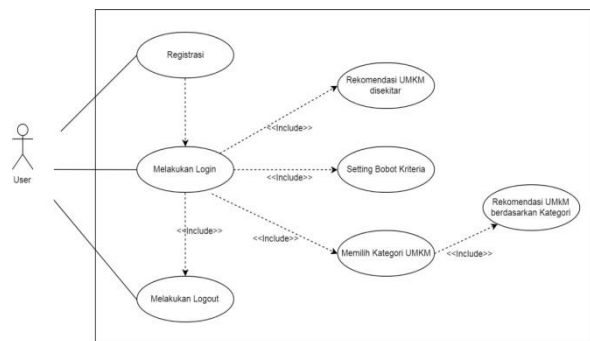


Figure 5 Usecase Diagram

6.5. Interface Implementation

The design of interface aimed at the implementation of an overview of the applications that will be built. This design is implemented into a system that can be used by users who need it. Draft interface application development system of UMKM recommendation are as follows:

1. Login Interface Implementation

Here is a picture that illustrates the login Interface 6 draft interface login.

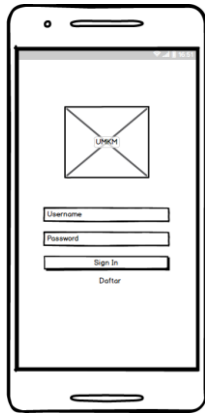


Figure 6 Login Interface Implementation

2. Main Menu Interface Implementation

Here are the Main Menu Interface Figure 7 which depicts the design of the interface main menu contains *UMKM* that existed around us.



Figure 7 Main Menu Interface Implementation

3. Recommendation Interface Implementation

Here are the Recommendation Interface Figure 8 which depicts the design of the interface Recommendation contains *UMKM* that existed around us.

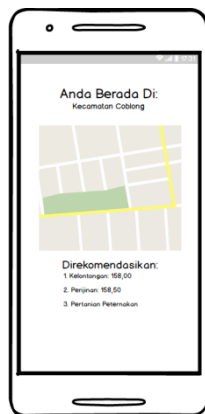


Figure 8 Recommendation Interface

4. *UMKM* Category Interface Implementation

Here is a Figure 9 Bandung *UMKM*'s recommendations Interface that describes the design of the interface contains a display of *UMKM* in Bandung.

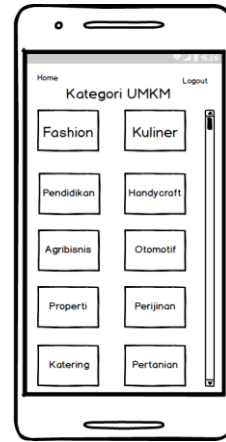


Figure 9 Category Interface Implementation

7. CONCLUDING

7.1 CONCLUSION

Based on the results of the testing system software Recommendations SMEC then retrieved the following conclusions:

1. Software can help would-be entrepreneurs who have difficulty in finding a strategic location to build his *UMKM*.
2. Software can help aspiring entrepreneurs recommend *UMKM* is right on target with target marketing.
3. Software can help ease the wirausahaan candidates in the search for locations and information of SMEs using android smartphone.

3.2. Suggestion

As for the suggestion to the development of software that is:

1. Expand the *UMKM* place recommendations not only in Bandung but include Jawa Barat.
2. Develop a Platform that can be supported by the software given the current can only be used on the android platform.
3. Added a feature of booking an empty shop places a strategic location to open a place of *UMKM*.

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